

### Water Quality of Canals with respect to Criteria parameters during 2021 (January-December)

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values)					Frequency of violation (Percent of violation) from designated criteria value				Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			Parameters					DO	BOD	TC	FC			
			pH	DO (mg/L)	BOD (mg/L)	TC (MPN/100 ml)	FC (MPN/100 ml)							
<b>Taladanda canal</b>														
1.	Jobra*	4	7.9 (7.4-8.3)	7.9 (7.6-8.4)	1.4 (< 1.0-1.9)	28750 (3500-54000)	8895 (790-17000)	0	0	1 <sup>\$</sup> (25) 4 <sup>\$\$</sup> (100)	1 (25)	Does not conform to Class B,C	TC,FC	Human activities
2.	Ranihat*	4	7.7 (7.0-8.2)	7.5 (7.2-8.0)	1.5 (1.1-1.9)	80700 (1400-160000)	80165 (330-160000)	0	0	1 <sup>\$</sup> (25) 2 <sup>\$\$</sup> (50)	1 (25)	Does not conform to Class B & C	TC,FC	Human activities and waste water of Cuttack town
3.	Chatrabazar*	4	7.9 (7.2-8.2)	7.6 (7.2-7.8)	1.4 (1.1-1.6)	82450 (4900-160000)	80850 (1700-160000)	0	0	1 <sup>\$</sup> (25) 1 <sup>\$\$</sup> (25)	1 (25)		TC,FC	
4.	Nuabazar*	4	7.8 (7.1-8.2)	7.7 (7.2-8.0)	1.6 (1.1-2.1)	86500 (13000-160000)	82450 (4900-160000)	0	0	4 <sup>\$</sup> (100) 4 <sup>\$\$</sup> (100)	4 (100)	Does not conform to Class B & C	TC,FC	
5.	Biribati*	4	7.8 (7.3-8.2)	7.8 (7.0-8.4)	1.6 (1.2-2.4)	19250 (3500-35000)	8895 (790-17000)	0	0	1 <sup>\$</sup> (25) 2 <sup>\$\$</sup> (50)	1 (25)		TC,FC	
6.	Atharabanki	12	7.4 (7.0-7.9)	6.2 (4.2-7.6)	1.5 (< 1.0-2.4)	3789 (490-16000)	1885 (110-9200)	1 <sup>\$\$</sup> (8)	0	1 <sup>\$</sup> (8) 9 <sup>\$\$</sup> (75)	1 (8)	Does not conform to Class B & C	DO, TC,FC	Human activities
<b>**Class 'C'</b>			<b>6.5-8.5</b>	<b>4 and above</b>	<b>3 or less</b>	<b>5000 or less</b>	<b>Drinking water source with conventional treatment followed by disinfection</b>							
<b>**Class 'B'</b>			<b>6.5-8.5</b>	<b>5 and above</b>	<b>3 or less</b>	<b>500 or less</b>	<b>Outdoor bathing</b>							
<b>Water quality criteria for bathing water</b>			<b>6.5-8.5</b>	<b>5 and above</b>	<b>3 or less</b>		<b>2500 (Maximum Permissible)</b>	<b>Water use for organised outdoor bathing (MOEF Notification G.S.R. No. 742(E) Dt. 25.09.2000)</b>						

\* Data for the period August-November, 2021

\*\* Tolerance limits for Inland Surface water bodies (IS-2296-1982) \$ for Class C and \$\$ for Class B

Contd..

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values)					Frequency of violation (Percent of violation) from designated criteria value				Existing Class	Parameters responsible for downgrading the water quality	Possible Reason	
			Parameters					DO	BOD	TC	FC				
			pH	DO (mg/L)	BOD (mg/L)	TC (MPN/100 ml)	FC (MPN/100 ml)								
<b>(b) Puri canal</b>															
1.	Hansapal	12	7.8 (6.7-8.4)	7.2 (5.9-8.6)	1.3 (< 1.0-1.8)	4370 (1700-7900)	1596 (460-2300)	0	0	1 <sup>§</sup> (8) 10 <sup>\$\$</sup> (83)	0	Does not conform to Class B	TC	Human activities	
2.	Jagannat hpur	12	7.6 (7.2-8.3)	7.5 (5.9-10.0)	1.3 (< 1.0-1.9)	3480 (1700-4700)	1416 (490-2200)	0	0	0 <sup>§</sup>  10 <sup>\$\$</sup> (83)	0	Does not conform to Class B	TC	Human activities	
3.	Chandan pur***	6	7.3 (7.0-7.7)	7.1 (3.6-10.5)	1.3 (< 1.0-1.8)	3150 (1300-4900)	1210 (140-2100)	1 (17)	0	0 <sup>§</sup>  10 <sup>\$\$</sup> (83)	0	Does not conform to Class B, C	DO, TC		
<b>**Class 'C'</b>			<b>6.5-8.5</b>	<b>4 and above</b>	<b>3 or less</b>	<b>5000 or less</b>	<b>Drinking water source with conventional treatment followed by disinfection</b>								
<b>**Class 'B'</b>			<b>6.5-8.5</b>	<b>5 and above</b>	<b>3 or less</b>	<b>500 or less</b>	<b>Outdoor bathing</b>								
<b>Water quality criteria for bathing water</b>			<b>6.5-8.5</b>	<b>5 and above</b>	<b>3 or less</b>		<b>2500 (Maximum Permissible)</b>	<b>Water use for organised outdoor bathing (MOEF Notification G.S.R. No. 742(E) Dt. 25.09.2000)</b>							

§ for Class C and \$\$ for Class B \*\*\* Data for the period March, July, September, October, November and December, 2021

**NB :**The criteria of non-compliance with respect to TC has been calculated on the following basis:(Ref : IS 2296-1982 foot note)

**For Class B :** TC values with more than 5% of samples show more than 2000 MPN/100 ml and more than 20% of the samples show more than 500 MPN/ 100 ml.

**For Class C :** TC values with more than 5% of samples show more than 20,000 MPN/100 ml and more than 20% of the samples show more than 5000 MPN/ 100 ml.

Sl. No	Sampling Location	No. of Obs.	Annual average value (Range of values)				Frequency of violation (Percent of violation) from designated criteria value			Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			Parameters				EC	SAR	B			
			pH	EC (microSiemens /cm)	SAR	B (mg/L)						
<b>(a) Taladanda canal</b>												
1.	Jobra*	4	7.9 (7.4-8.3)	187 (165-203)	0.47 (0.32-0.62)	<0.5 (<0.5-<0.5)	0	0	0	Conform to Class E		
2.	Ranihat*	4	7.7 (7.0-8.2)	244 (174-309)	0.84 (0.43-1.48)	<0.5 (<0.5-<0.5)	0	0	0			
3.	Chatrabazar*	4	7.9 (7.2-8.2)	188 (165-205)	0.51 (0.42-0.65)	<0.5 (<0.5-<0.5)	0	0	0			
4.	Nuabazar*	4	7.8 (7.1-8.2)	186 (127-208)	0.49 (0.24-0.72)	<0.5 (<0.5-<0.5)	0	0	0			
5.	Biribati*	4	7.8 (7.3-8.2)	194 (171-225)	0.53 (0.29-0.92)	<0.5 (<0.5-<0.5)	0	0	0			
6.	Atharabanki	12	7.4 (7.0-7.9)	311 (194-490)	1.16 (0.37-3.04)	<0.5 (<0.5-<0.5)	0	0	0			
<b>Puri Canal</b>												
1.	Hansapal	12	7.8 (6.7-8.4)	209 (175-248)	0.48 (0.22-0.91)	<0.5 (<0.5-<0.5)	0	0	0	Conform to Class E		
2.	Jagannathpur	12	7.6 (7.2-8.3)	203 (163-259)	0.57 (0.23-1.09)	<0.5 (<0.5-<0.5)	0	0	0			
3.	Chandanpur***	6	7.3 (7.0-7.7)	212 (178-325)	0.49 (0.26-0.71)	<0.5 (<0.5-<0.5)	0	0	0			
<b>**Class 'E'</b>			<b>6.0-8.5</b>	<b>2250 or less</b>	<b>26 or less</b>	<b>2.0 or less</b>	<b>Irrigation, industrial cooling, controlled waste disposal</b>					

\* Data for the period August-November, 2021 \*\* Tolerance limits for Inland Surface water bodies (IS-2296-1982)

\*\* Tolerance limits for Inland Surface water bodies (IS-2296-1982)

\*\*\* Data for the period March, July, September, October, November and December, 2021

**Water Quality of Taladanda Canal with respect to other parameters during 2021 (January-December)**

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Mineral constituents					
		Annual average values (Range of values)											
		TSS	Total alkalinity	COD	NH <sub>4</sub> -N	Free NH <sub>3</sub> -N	TKN	% Na	TDS	TH	Cl	SO <sub>4</sub>	F
		(mg/L)		(mg/L)				(mg/L)					
1.	Jobra*	29 (<10-44)	74 (68-80)	9 (7.2-11.6)	0.56 (0.56-0.56)	0.016 (0-0.045)	2.8 (<1.5-3.92)	20.5 (15.45-25.26)	NA	72 (68-76)	12 (8-18)	14.2 (10.4-20.5)	0.32 (0.275-0.345)
2.	Ranihat*	22 (<10-45)	80 (76-84)	10.8 (7.2-13.3)	0.56 (0.56-0.56)	0.003 (0-0.013)	3.64 (2.24-6.16)	28.33 (19.55-42.13)	NA	74 (64-88)	28 (10-46)	18 (10.8-26.9)	0.316 (0.271-0.341)
3.	Chhatrabazar*	25 (13-47)	77 (68-84)	8.9 (7.2-13.3)	0.56 (0.56-0.56)	0.016 (0-0.045)	2.8 (2.24-3.36)	21.64 (18.87-25.77)	NA	73 (68-76)	12 (10-12)	14.9 (10.6-22.8)	0.323 (0.278-0.358)
4.	Nuabazar*	33 (<10-57)	83 (76-88)	9.9 (7.3-11.6)	0.747 (0.56-1.12)	0.017 (0-0.045)	4.2 (1.68-6.16)	20.18 (11.52-27.36)	NA	78 (76-80)	10 (6-12)	15.2 (11-23.8)	0.328 (0.259-0.357)
5.	Biribati*	39 (20-71)	82 (76-96)	9.9 (7.3-14.4)	0.747 (0.56-1.12)	0.019 (0-0.045)	3.64 (1.68-5.6)	21.82 (13.84-33.81)	NA	76 (72-80)	15 (10-26)	15.2 (11.7-21.5)	0.315 (0.269-0.347)
6.	Atharabanki	30 (10-73)	95 (68-120)	12.2 (7.3-15.4)	0.63 (0.56-1.12)	0.006 (0-0.017)	3.58 (<1.5-7.28)	31.18 (14.54-58.4)	230 (156-304)	91 (68-120)	41 (10-86)	20.7 (6.4-40.7)	0.474 (0.272-1.25)
<b>**Class 'C'</b>		-	-	-	-	-	-	-	-	1500	600	400	1.5
<b>**Class 'E'</b>		-	-	-	-	-	-	-	-	2100	600	1000	-

\* Data for the period August-November, 2021

\*\* Tolerance limits for Inland Surface water bodies (IS-2296-1982)

Sl. No.	Sampling Location	Nutrients		Heavy metals							
		Annual average values (Range of values)									
		NO <sub>3</sub> <sup>-</sup>	PO <sub>4</sub> <sup>3-</sup> -P	Cr(VI) ##	Fe##	Ni##	Cu##	Zn##	Cd##	Hg##	Pb##
		(mg/L)		(mg/L)							
1.	Jobra*	2.45 (0.921-4.445)	<0.05 (<0.05-0.093)	NA	NA	NA	NA	NA	NA	NA	NA
2.	Ranihat*	2.176 (0.429-3.338)	<0.05 (<0.05-<0.05)	NA	NA	NA	NA	NA	NA	NA	NA
3.	Chhatrabazar*	2.191 (0.808-3.193)	<0.05 (<0.05-<0.05)	NA	NA	NA	NA	NA	NA	NA	NA
4.	Nuabazar*	2.223 (1.588-3.279)	0.091 (<0.05-0.141)	NA	NA	NA	NA	NA	NA	NA	NA
5.	Biribati*	2.161 (0.662-2.954)	<0.05 (<0.05-0.172)	NA	NA	NA	NA	NA	NA	NA	NA
6.	Atharabanki	1.395 (0.542-4.682)	0.204 (<0.05-0.911)	NA	0.077	0.013	0.002	0.039	0.0012	0.00037	0.014
<b>**Class 'C'</b>		50	-	0.05	50	-	1.5	15.0	0.01	-	0.10
<b>**Class 'E'</b>		-	-	-	-	-	-	-	-	-	-

\* Data for the period August-November, 2021

\*\* Tolerance limits for Inland Surface water bodies (IS-2296-1982)

## Data for the period April, 2021

**Water Quality of Puri Canal with respect to other parameters during 2021 (January-December)**

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Mineral constituents					
		Annual average values (Range of values)											
		TSS	Total alkalinity	COD	NH <sub>4</sub> -N	Free NH <sub>3</sub> -N	TKN	% Na	TDS	TH	Cl	SO <sub>4</sub>	F
		(mg/L)		(mg/L)				(mg/L)					
1.	Hansapal	25 (<10-80)	88 (68-104)	9.9 (7.3-16.7)	1.12 (0.56-2.24)	0.045 (0-0.280)	2.88 (<1.5-7.28)	19.08 (9.38-32.1)	136 (132-140)	89 (68-132)	14 (6-24)	16.1 (8.4-24.2)	0.432 (0.23-1.24)
2.	Jagannathpur	21 (<10-64)	85 (52-100)	11.5 (6.7-18)	0.96 (0.56-2.8)	0.017 (0-0.090)	3.73 (2.24-6.16)	22.03 (9.92-37.68)	136 (128-144)	81 (56-108)	16 (6-30)	14.1 (6.6-19.1)	0.386 (0.154-0.793)
3.	Chandanpur***	53 (10-191)	90 (72-132)	9.9 (7.3-11.4)	0.784 (0.56-1.12)	0.007 (0-0.017)	2.8 (2.24-3.92)	19.78 (12.54-24.61)	196 (196-196)	81 (72-108)	16 (8-24)	11.5 (<5-23.9)	0.294 (0.186-0.453)
<b>**Class 'C'</b>		-	-	-	-	-	-	-	-	-	600	400	1.5
<b>**Class 'E'</b>		-	-	-	-	-	-	-	-	-	600	1000	-

Sl. No.	Sampling Location	Nutrients		Heavy metals							
		Annual average values (Range of values)									
		NO <sub>3</sub> <sup>-</sup>	PO <sub>4</sub> <sup>3-</sup> -P	Cr(VI) ##	Fe##	Ni##	Cu##	Zn##	Cd##	Hg##	Pb##
		(mg/L)		(mg/L)							
1.	Hansapal	1.782 (0.676-4.496)	<0.05 (<0.05-0.081)	NA	1.427	0.011	0.005	0.010	0.0016	0.00037	0.009
2.	Jagannathpur	1.589 (0.21-4.513)	<0.05 (<0.05-0.296)	NA	0.308	0.016	0.007	0.110	0.0021	0.00037	0.010
3.	Chandanpur***	1.942 (0.885-3.291)	<0.05 (<0.05-<0.05)	NA	NA	NA	NA	NA	NA	NA	NA
<b>**Class 'C'</b>		50	-	0.05	50	-	1.5	15.0	0.01	-	0.10
<b>**Class 'E'</b>		-	-	-	-	-	-	-	-	-	-

\*\* Tolerance limits for Inland Surface water bodies (IS-2296-1982)

\*\*\* Data for the period March, July, September, October, November and December, 2021

## Data for the period April, 2021